THE VETERINARY RECORD
FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888

No. 49. DECEMBER 5th, 1953 VOL. 65.

ORGANISMS OF THE PLEUROPNEUMONIA GROUP CAUSING DISEASE IN GOATS

BY

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Two organisms of the pleuropneumonia group are known to cause disease in goats. Bridré & Donatien showed in 1923 that contagious agalactia in sheep and goats was caused by an organism similar in morphology and cultural behaviour to the organism causing contagious bovine pleuropneumonia. The organism of contagious agalactia, later named *Anulomyces agalaxiae* (Wroblewski, 1931), was therefore the second member to be recognised of a group of organisms now known to contain many species. More recently it was shown by Longley (1951), and independently confirmed by Beveridge & Chu (1950), that contagious pleuropneumonia of goats, originally regarded as a virus infection, was also caused by an organism of the pleuropneumonia group. These two pleuropneumonia-like organisms represent two distinct species (Edward, 1954).

Although the organism of contagious agalactia has been known for 30 years, few attempts seem to have been made to study its cultural and biochemical properties for comparison with those of the organism of bovine pleuropneumonia. There is a tendency on the continent of Europe to regard the organism as a virus and to study it by techniques used for viruses, omitting methods suitable for an organism which can be grown in artificial media (Zavagli, 1951). In examining a group of strains isolated from goats it became apparent that sometimes the organism of goat pneumonia was being wrongly identified as the organism of agalactia. These observations will be recorded to emphasise the importance of distinguishing between these two species of the pleuropneumonia group by their cultural properties. Accurate identification of strains is particularly necessary if attempts are made to control disease by vaccines.

PROPERTIES OF THE ORGANISM OF CONTAGIOUS AGALACTIA

Six strains, believed to be the organism of contagious agalactia (*Anulomyces agalaxiae*), were obtained through the kindness of Professor P. Hauduroy from Dr. Anguelov, of Sophia, from Dr. C. Lopez, of Madrid, and from Professor V. Zavagli, of Rome. One strain differed markedly from the others; its properties were those of the organism of goat pneumonia and there is little doubt that it had been wrongly identified originally. The properties of *Anulomyces agalaxiae* have been determined by examining the other five strains by methods described elsewhere (Edward, 1950, 1954).

When four of the five strains were grown on agar media enriched with horse serum they formed a peculiar film and spots, similar to those produced by certain other species of the pleuropneumonia group. In their other properties the five strains behaved similarly. They grew only poorly on media enriched with rabbit serum. In semi-solid media they grew best near the surface producing a smooth growth. They produced haemolysis of horse blood agar, but did not ferment glucose or any other carbohydrate tested. When six-day broth cultures were centrifuged for 60 minutes at 4,000 r.p.m. in the angle centrifuge, the supernatant did not discolour horse red cells. No liquefaction of inspissated serum was detected (Table I).

ORGANISM OF CONTAGIOUS PLEUROPNEUMONIA OF GOATS

A strain of the organism of contagious pleuropneumonia of goats, isolated by Dr. H. P. Chu, grew poorly in media to which serum had not been added. Growth was greatly improved by adding horse serum to the medium; isolated colonies then attained a diameter of 1·5 mm. and were thus larger than colonies of any other organism of the pleuropneumonia group. The large size of the colonies may be characteristic of this organism, because a strain originally isolated by Longley also produced colonies of similar size. Chu's strain grew as well on a medium enriched with rabbit serum as on a horse serum medium. No film or spots were formed. The strain grew best near the surface of a semi-solid medium producing a smooth growth. It fermented glucose, fructose, maltose, mannose, dextrin, starch and glycogen, but not lactose, saccharose, mannitol, dulcitol, galactose or salicin. It produced haemolysis of horse blood agar and the supernatant from a six-day fluid culture discoloured horse erythrocytes. It exhibited proteolytic properties by liquefying inspissated serum (Table I). The cultural and biochemical properties of the organism of goat pneumonia are thus different in many respects from the organism of contagious agalactia.

TABLE I

SUMMARY OF PROPERTIES OF PLEUROPNEUMONIA-LIKE ORGANISMS ISOLATED FROM GOATS

Organism	Film and spots	Growth on rabbit serum agar	Growth on semi-solid medium	Smooth or granular	Fermentation of glucose	Haemolysis of blood agar	Discoloration of erythrocytes by supernatant	Liquefaction of inspissated serum
Of contagious agalactia (*Anulomyces agalaxiae*)	Usually +	Poor	Better near surface	Smooth	—	+	—	—
Of goat pleuropneumonia (*Asterococcus mycoides* var. *capri*)	—	Good	Better near surface	Smooth	+	+	+	+
Of bovine pleuropneumonia (*Asterococcus mycoides* var. *bovis*)	—	Poor	Better near surface	Smooth	+	+	+	+

Other Strains Causing Disease in Goats

An infectious disease of goats, associated with a rapidly fatal oedematous cellulitis, has recently been endemic around Sparta in Greece. A pleuropneumonia-like organism, isolated from infected animals, was shown to be the causal agent. The serological evidence suggested that the organism was the organism of contagious agalactia and the disease was regarded as a hyperacute form of contagious agalactia (Melanidi, 1951). It is, however, apparent that the results of this naturally acquired infection are very similar to those produced by inoculating goats subcutaneously with the organism of goat pneumonia (Longley, 1951). A strain of the organism causing the disease in Sparta, kindly sent by Dr. C. Melanidi, was found to have exactly the same cultural and biochemical properties as the organism of goat pneumonia. Since these properties were quite different from those of the organism of agalactia it would appear that the disease in Sparta is caused by an organism more closely related to the organism of goat pleuropneumonia than to the organism of agalactia.

One of six strains submitted by other laboratories as representative strains of the organism of agalactia was found to have the same cultural and biochemical properties as the organism of goat pneumonia. This strain, A1, had been adapted to growth in the embryonated egg.

Serological Findings

Antisera, prepared in rabbits against strain A1, strain A2 (a typical strain of the organism of agalactia) and a strain of the organism of bovine pleuropneumonia, were used in agglutination and complement fixation tests to examine the serological properties of these three strains, the organism of goat pleuropneumonia and strain "Sparta," isolated from goats in Greece with infective cellulitis. The antiserum to strain A2 agglutinated four other strains of the organism of agalactia to the same titre as it agglutinated the homologous strain. Since the growth of pleuropneumonia-like organisms can be inhibited by antibody incorporated in the culture media, a third method is available for testing antigenicity (Edward & Fitzgerald, 1954). The A2 antiserum did not exhibit inhibitory activity; antisera to A1 and to the organism of bovine pleuropneumonia inhibited growth of the homologous organisms, but not the growth of other strains.

There were no cross-reactions between strain A1 and the organism of bovine pleuropneumonia on the one hand and strain A2 on the other, except that strain A2 fixed complement with the antiserum against the organism of bovine pleuropneumonia at a dilution of 1/8 only (Table II). There was no cross-agglutination between the organism of bovine pleuropneumonia and strain A1, but strain A1 antiserum fixed complement with the organism of bovine pleuropneumonia to a dilution of 1/128. Unfortunately, suspensions of the organism of goat pleuropneumonia and strain "Sparta" were too unstable for agglutination tests. Neither organism fixed complement to a significant degree with A2 antiserum, but both fixed complement with A1 antiserum at a lower titre with the antiserum to the organism of bovine pleuropneumonia. Thus strain A1 and strain "Sparta" appear to be serologically related to the organism of goat pleuropneumonia.

Summary and Conclusions

Two organisms of the pleuropneumonia group produce disease in goats. These two species of organism are serologically different; they also differ widely in their cultural and biochemical properties. All pleuropneumonia-like organisms isolated from goats should be carefully examined to determine their properties, so that they may be accurately identified, as mistakes have been made previously, the organism of goat pleuropneumonia being mistaken for the organism of contagious agalactia. There appears to be a need for further observations on the part played by organisms of the pleuropneumonia group in diseases of goats. An infectious and highly fatal cellulitis, which is endemic in part of Greece, has been regarded as a hyperacute form of contagious agalactia. However, a pleuropneumonia-like organism isolated from an animal with this disease was similar to the organism of goat pleuropneumonia. This latter organism, in addition to causing pleuropneumonia, may produce other types of lesion with a different clinical picture.

Pleuropneumonia of goats closely resembles pleuropneumonia of cattle in pathology. The organisms responsible for the two diseases have similar cultural properties (Table I); the complement fixation test also suggests that they may share common antigens. In two of their properties, their ability to liquefy inspissated serum and the ability of the supernatant of six-day cultures to discolour erythrocytes, they differ from all other organisms of the pleuropneumonia group which have been tested (Edward, 1954). These organisms may therefore not belong to two different species, but may be two varieties of one species. It is suggested that they should be known as *Asterococcus mycoides* var. *bovis* and *Asterococcus mycoides* var. *capri*. Dujardin-Beaumetz (1906) infected goats experimentally with cultures of the organism of bovine pleuropneumonia which had been grown in media containing sheep serum. It is therefore possible that the bovine organism has become adapted to goats under natural conditions. The susceptibility of cattle to the goat organism does not appear to have been tested, but it is to be noted that cattle do not acquire the disease in the field from infected goats.

I wish to thank those who sent me cultures.

Table II

Results of Serological Examination of Strains

Strain	Antiserum to strain A2 (organism of agalactia)		Antiserum to organism of bovine pleuropneumonia			Antiserum to strain A1		
	Agglutination titre	C.F.T. titre	Agglutination titre	C.F.T. titre	Inhibition test	Agglutination titre	C.F.T. titre	Inhibition test
A2 (organism of agalactia)... ...	**1024**	**1024**	<4	8	—	<4	<2	—
Organism of bovine pleuropneumonia	<4	<2	**512**	**256**	+	<4	128	—
A1	<4	<2	<4	<2	—	**256**	**512**	+
Organism of goat pleuropneumonia	Unstable	2	<8	16	—	Unstable	256	—
"Sparta"	Unstable	2	Unstable	64	—	Unstable	128	—

+ = Inhibition of growth. — = No inhibition of growth.

THE MEASUREMENT OF HEAT LOSS THROUGH FLOORS

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Introduction

That the health and productivity of pigs is frequently adversely affected by cold environmental conditions is now widely accepted, and consequently various methods have been used to prevent excessive heat losses from pigs, including the insulation of floors. While the heat losses from the atmosphere of a piggery through the floor are usually much less than through the walls and roof (Inglis & Robertson, 1951), there might obviously be very heavy losses directly through the floor from a pig when recumbent, and these losses would be expected to vary with the nature and condition of the floor. In order to lessen the heat losses from pigs kept on concrete floors which have relatively high rates of heat conduction, it has been suggested that such measures as putting insulating air spaces and/or layers of pitch in the concrete flooring should be adopted, and it has been said that such measures obviate the need for wooden platforms (N.V.M.A., 1947), and some have even recommended dispensing with bedding under such conditions. Now, while insulating spaces and layers of pitch doubtless have some retarding effect on the flow of heat vertically downwards from an animal, it is obvious that the heat would flow not only vertically but also in other directions, thus negativing to a certain extent the purpose of the insulation, so that an insulated concrete floor may not be so effective as has been claimed. It was therefore thought that it would be of considerable interest to measure the effects of these methods of insulation on concrete floors and also to compare the heat losses through insulated and non-insulated concrete floors with those through other types and through flooring covered with the traditional forms of bedding.

Method

On commencing these investigations it was found that while a number of workers had used an artificial "foot" to measure the initial chilling effects of different types of flooring (Billington, 1948), no suitable portable apparatus had been devised for measuring the more prolonged steady heat losses due to the continued contact of a warm surface with a floor. The following apparatus was, therefore, designed and used for these observations :—

An electrically heated aluminium plate, 1 foot square, well insulated at the sides and top, was thermostatically controlled at a temperature of 83° F. (approximately the mean surface temperature of the pig). The current was supplied from the mains, or, where an electric supply was not available, from a 12-volt battery, the current from which was changed to 250 volts A.C. by means of a rotary converter. An integrating meter was incorporated to measure the current consumed. After being heated up to its maximum level the plate was placed on the floor under test and the amount of electrical energy consumed per hour was taken as giving an approximate measure of the relative heat losses from the heated plate through the various types of flooring. It seems a reasonable assumption that the heat losses from the surface of a pig in contact with different types of flooring would vary in approximately the same way as the heat losses from this apparatus.

Eichbauer, in 1912, had pointed out that when a warm block was placed on certain types of flooring there was a rapid initial cooling which later levelled out to a slow fall in temperature. This was confirmed by Reiher & Hoffman, in 1930. Bearing this in mind two types of observation were made during the present series of tests, *viz.*,

(*a*) the heat losses per hour once these had become fairly steady (usually about 30 minutes after the commencement of the observation) (Table I), and

(*b*) the heat losses per hour during a run of one to one and a half hours including the initial cooling (Table II).

Each series of observations was made under similar environmental conditions and one of each pair of recordings set out in Table I was made immediately after the other.

Results

Table I

	Nature of floor.	*Heat Loss (kw./hr./sq. ft.)*
1.	(*a*) Dry concrete floor of animal house at Edinburgh Veterinary School	0·028
	(*b*) Same floor covered by dry wooden boards ...	0·014
2.	(*a*) Dry concrete floor of animal house at Edinburgh Veterinary School	0·027
	(*b*) Same floor covered by a thin layer of straw	0·014
3.	(*a*) Dry concrete floor at Mountmarle	0·028
	(*b*) Dry concrete floor insulated by hollow spaces and layer of pitch at Mountmarle ...	0·024
4.	(*a*) Dry concrete floor of passage in fattening house at Mountmarle	0·026
	(*b*) Dry concrete floor insulated by hollow spaces and layer of pitch in pen of fattening house at Mountmarle	0·024
5.	(*a*) Dry concrete floor in piggery at Shothead ...	0·027
	(*b*) Dry concrete floor with insulating spaces underneath in piggery at Shothead ...	0·024
6.	(*a*) Inch-thick wooden floor of pig ark at Easter Bush	0·015
	(*b*) Double floor insulated with glass wool in pig ark at Easter Bush	0·013

From the above observations it will be noted that a wooden board put over a concrete floor cut the heat losses by half, while a thin layer of straw litter was only slightly less effective. The incorporation of hollow spaces and other insulating material in concrete floors had much smaller effects, *viz.*, in observations 3 and 4, the incorporation of hollow spaces and

References

Beveridge, W. I. B., & Chu, H. P. (1950). Personal communication.
Bridré, J., & Donatien, A. (1923). *C.R. Acad. Sci., Paris.* **177.** 841.
Dujardin-Beaumetz, E. (1906). *Ann. Inst. Pasteur.* **20.** 449.
Edward, D. G. ff. (1950). *J. gen. Microbiol.* **4.** 311.
———. (1954). *Ibid.* In the press.
——— & Fitzgerald, W. A. (1954). *J. Path. Bact.* In the press.
Longley, E. O. (1951). Contagious caprine pleuropneumonia. A study of the disease in Nigeria. Colonial Research Publications. No. 7. H.M. Stationery Office, London.
Melanidi, C. (1951). *Bulletin, Office International des Epizooties, Paris.* **36.** 363.
Wroblewski, W. (1931). *Ann. Inst. Pasteur.* **47.** 94.
Zavagli, V. (1951). *Bulletin, Office International des Epizooties, Paris.* **36.** 336.

a layer of pitch in the concrete floors cut the heat losses only by 14 and 8 per cent. respectively, while the insulating spaces in observations 5 cut the losses by 11 per cent.

The losses through a 1-inch-thick wooden floor of the pig ark, which had an 8-inch space beneath open to the atmosphere, were about half of those through a concrete floor, while with a similarly arranged double floor, where the intervening space between the two layers was packed with glass wool, the heat losses were only slightly less.

TABLE II

Observations including initial cooling effect.

		Heat Loss (kw./hr./sq. ft.)
At Royal (Dick) School of Veterinary Studies.		
1.	Dry concrete floor of animal hut	0·032
2.	Wet concrete floor in animal hut	0·048
3.	Concrete with thin layer of straw bedding	0·021
4.	Concrete with thick layer of dry sawdust	0·023
5.	Concrete with thick layer of damp sawdust	0·036
6.	Wooden laboratory floor covered with cork lino	0·02
7.	Laboratory floor, wooden boards	0·02
At Shothead.		
8.	Dry concrete floor in pig pen	0·031
9.	Concrete floor with thin layer of damp peat moss and straw litter	0·027
10.	Dry sleeping bed—concrete with insulating air spaces underneath	0·029
11.	Sleeping bed—concrete with insulated air spaces underneath, with layers of damp peat moss	0·026
12.	Sleeping bed—concrete with insulated air spaces underneath, with dry straw litter	0·014
13.	Dry wooden-floored pig creep	0·019
14.	Wooden-floored pig creep with dry straw litter	0·015
15.	Dry brick bed over concrete	0·022
16.	Brick bed over concrete with dry straw litter	0·012
17.	Wet brick over concrete	0·031
18.	Dry brick-floored pig creep	0·022
19.	Brick-floored pig creep with layer of dry straw	0·013
20.	Damp bricks in same pen as 19	0·029
21.	Dry concrete in same pen as 19	0·032

It will be seen that the heat losses through the dry concrete floors recorded in Table II were of the same order as those quoted in Table I, the somewhat higher figures doubtless being connected with the inclusion of the initial cooling effect in the second series of measurements. It is of interest to note that a thin layer of dry bedding again had a much greater effect in cutting down heat losses through concrete than had insulating air spaces. Thus, at the Royal (Dick) School of Veterinary Studies, putting a layer of dry straw and dry sawdust over the concrete cut the heat losses by 34 and 28 per cent. respectively, while at Shothead insulating air spaces in concrete only cut the heat losses by some 6 per cent. However, when dry straw litter was used in addition to the air spaces, the heat losses were cut to less than half those through ordinary concrete. Again, the losses through wood were relatively small, being about two-thirds of those through concrete. Dry bricks appeared to offer considerable advantages over concrete, the heat losses being only about 70 per cent. of those through concrete. It will be seen that dampness of floors or litter greatly increased the heat losses in all cases, wet concrete having 50 per cent. more heat loss than dry, while a floor covered with damp sawdust in one case had 12 per cent. more heat loss than dry concrete, but 25 per cent. less than that through wet concrete. As with concrete, wetness greatly increased the heat loss through bricks, the increase being about 40 per cent.

Discussion

These observations suggest the desirability of abandoning the common notion, widely quoted in the literature on animal habitations, that the provision of insulating air spaces or insulating material in a concrete floor is all that is required to solve the problem of heat losses through this material. Obviously the lateral heat spread, which remains relatively unaffected by such measures, plays an important part in determining the total effect and this presumably could only be effectively counteracted by a superficial insulating layer. Until such time as a really durable surface material with suitable insulating properties becomes available, our results would suggest that farmers might well save themselves the trouble and cost of incorporating insulating spaces in their concrete floors and concentrate instead on the old-fashioned, but still most economical, method of providing their animals with sufficient of a good bedding material.

Summary

An instrument was devised to measure heat loss through floors, such as would take place from the surface of a recumbent pig, and utilised to measure the heat losses through a number of different types of flooring, with and without litter. Insulating air spaces in concrete were found to have relatively small effects, wood and dry litter cut down the heat loss to a considerable extent, while brick was also of benefit as compared with concrete. Wetness of the floor or the litter increased the heat losses considerably in every case.

Acknowledgments.—We wish to thank the Agricultural Research Council for financing this survey, and Dr. Buchanan Smith and Dr. Donald for facilities to make observations in their piggeries.

References

Billington, N. S. (1948). *J. Hyg.* **46**. 445.
Eichbauer. (1912). *Über die Warmeableitung von Fussboden Gesundh.-Ing.* **35** (48). 897.
Inglis, J. S. S., & Robertson, A. (1951). *Emp. J. Exp. Agric.* **19** (75). 202.
National Veterinary Medical Association. (1947). Publication No. 14.
Reiher & Hoffman. (1930). Neuere Untersuchungen uber die Warmehaltung von Fussbodenhelagen. Vom wirtschaftlichen Bauen. (8). 85.

BRITISH SHOW-JUMPING TEAM'S SUCCESSES

The British show-jumping team in the United States and Canada ended their successful tour at the Toronto Royal Agricultural Winter Fair on Saturday of last week by winning the Nations' Cup from three other teams, Canada, the United States and Eire. This was the most important of the three nations' cups for which they competed at Harrisburg, New York and Toronto, and brought the team's total score up to 11, which was more than any of the other three teams achieved during the tour. Canada, with 6½ points, was next best.

"The failure of Foxhunter and Tosca to find their form early in the tour," comments the Equestrian Correspondent of *The Times*, "was a severe handicap, but Miss Smythe's Prince Hal jumped brilliantly throughout. Foxhunter returned to his most majestic form at the end of the New York show and is as fit as ever. Mr. Hanson's The Monarch performed consistently all through and was repeatedly placed high in the order.

"Jumping in confined space and in the hothouse atmosphere of indoor arenas was trying for horses more accustomed to the outdoor competitions in England and on the Continent, but even so they proved themselves at least the equal of, and generally superior to, any others. That Canadian jumping is improving rapidly was proved by consistently good form, and in young Miss Shirley Thomas Canada has a rider not greatly inferior to Miss Smythe."

MONKEY GLANDS FOR CATS

The Treatment of Miliary Eczema in the Cat by the Subcutaneous Implantation of Testosterone

BY

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Miliary eczema of the cat has long been one of the banes of the life of the small-animal practitioner, and even to-day the aetiology of this troublesome condition has not been decided.

The condition occurs typically in the castrated male cat at any age between two and seven years in the first instance, but it is seen on rare occasions in the entire male and in the female animal.

Symptoms commence as a thinning of the hair along the base of the spine, at which site small pin-point scabs may be detected on the skin. Spreading occurs both forwards towards the head and backwards along the upper aspect of the tail. Lateral extension over the sides of the body is restricted. As more minute scabs form there is a tendency for them to coalesce and develop into open weeping sores. At the same time fresh centres of alopecia and eczema make their appearance over the internal and posterior surfaces of the hind legs. In severe cases the skin of the abdomen and that around the neck may be affected. Weeping sores eventually may develop in any of these sites.

The affected parts irritate violently and the condition is aggravated by the continual licking of the cat's rough tongue. Hair is licked off in large quantities and swallowed, hairballs form which impair the appetite and digestion and so further aggravate the condition by lowering the animal's general health.

Aetiology and Treatment

Many views have been expressed about the aetiology of miliary eczema, many treatments devised and successes claimed from a wide variety of these treatments.

Some would have us believe that the condition has only become common since the last war, and that it is in some way a legacy of the poor feeding during that time. One cannot help wondering whether—even if this observation is true in respect of *recorded* cases—it is not more likely to be the result of a more enlightened differential diagnosis on the part of the practitioner in recent years.

Many have held that the cat's diet is an important factor in the aetiology. The eating of too much fish has been blamed, and the condition accordingly labelled " fish eczema." But I think it would be more correct to lay the blame here on the restricted nature of the diet rather than on the preponderance of any particular food, whether that be fish, meat or anything else. Very many cats eat nothing but fish but fortunately by no means all of these suffer from miliary eczema—conversely, many affected cats do not eat much fish. Practitioners have reported good results from feeding artificial dietary supplements such as those of the " Murnil " (Bayer) vitamin H group, or by using injections of such biologicals as " Livadex " (B.D.H.) or " Cytamen " (Glaxo) vitamin B_{12}. If, however, a restricted diet does play a part in this condition it is only to be expected that such products would assist in some measure by partially correcting inevitable dietary deficiencies.

More recently it has been stated that miliary eczema is most common in castrated male cats and that it is therefore the result of a cycle of events which leads ultimately to a state of hypothyroidism. Many successes have been claimed from treatment with thyroid extract by oral administration. Whilst it is necessary to point out that the majority of cats which are seen in our surgeries are castrated males, it is still no doubt true that the condition has a primary predilection for this gender.

Whenever beneficial results are claimed from such widely different lines of treatment one wonders whether perhaps all the suggested factors may combine together to produce the condition. The entire male eating a restricted diet, and the castrated male eating a varied diet may both be relatively safe, but the castrated male on a restricted diet may in time develop such a predisposition that it is liable to break down into a clinical case at any time—either spontaneously or as the result of the provocation of some exciting factor. Such exciting factors may be fleas or other external parasites (not necessarily in large numbers) or even bites and scratches inflicted by other cats in a fight.

It was my practice for some years to treat all cases of miliary eczema in the cat by dealing with all three possibilities simultaneously, *viz.* :—

(1) Elimination of all external parasites and local treatment of any skin lesions,

(2) Correction of diet by introducing as much variety as possible, and

(3) Provision of hormonal stimulation by the administration of 1 to 3 gr. thyroid extract daily over a long period.

Results from this combined treatment were gratifying, and very stubborn cases could be helped still further by the administration of one of the dietary supplements either orally or parenterally. But there remained many cases which did not respond, and I began to suspect that these were, in fact, those cases in which the owners either were unable, or forgot, to give the regular dosing with thyroid extract which is so essential if this treatment is to succeed.

It was suggested to me that the subcutaneous implantation of testosterone would not only provide the requisite hormonal stimulation and at the same time overcome the problem of administration, but would also provide a glandular extract almost identical to that natural hormone which had been denied the animal by castration. This treatment was accordingly adopted in a series of 42 cases, and the technique involved and the results obtained were as follows.

Method.—The method adopted consists of the insertion of an implant of testosterone under the skin of the inside of whichever hind leg is least affected. The animal is anaesthetised with ether, an area of about 1 square inch shaved high up on the inside of the leg, and a small incision made. A probe is inserted through the incision and a passage forced through the subcutaneous tissues down to the region of the hock. Sterilised implants are supplied in glass containers. The outside of the container is sterilised with spirit and it is then opened. The implant is grasped at the tip of a pair of " Sturdy " (cat spaying) forceps by which means it is inserted through the incision and along the prepared passage. It is necessary to exercise a little care when inserting the implant in the forceps to ensure that it does not break or crumble. It is then possible to hold the implant through the skin with the fingers of the other hand whilst the forceps are slackened and withdrawn. The incision is closed with one or two sutures of No. 3 (N) purple nylon. This technique was found quite satisfactory in every case and was not modified.

The implant is inserted as far down the leg and as far away from the incision as possible as there is a tendency for it to find its way back along the channel and if it reaches the site of the incision before this has healed there is a possibility that it may be licked out by the animal. The advantages of the chosen site are that this risk is minimised since it would

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be necessary for the implant to travel upwards before it could be lost, also that the skin in this area is thin and the implant can be palpated easily to check up on its position. No doubt it would be possible to insert an implant by means of a "pellet injector" such as is used to insert stilboestrol implants for the "chemical caponisation" of cockerels, but I feel that a greater measure of security is assured by my own technique.

Results

The following may be taken to be quite typical of the course of events which may be expected after the implantation. After one week the incision will be healed and the implant easily palpable under the skin.

After two weeks there will not yet be any improvement in the skin condition although its further development will have been arrested. There may, however, be changes in the temperament of the cat inasmuch as it seems to be regaining some of its male cat characteristics. Such changes consist of a desire to spend the greater part of its time out of doors, and when inside it may become temporarily objectionable either on account of odour or by its paying continual attention to its penis which is sometimes partly erected. But it will be generally more lively and its appetite will have improved.

After three weeks a general improvement in the skin condition will be apparent.

After four weeks the character changes will be regressing.

After five weeks the cure of the skin condition will be almost complete, new hair will be making its appearance, and the cat's temperament will be returning to normal.

After eight or nine weeks the cure will be complete, the animal will have a thick and luxurious coat and it will have returned to normal in its habits. It will be lively and feeding well, and its eyes will have regained a healthy lustre.

Dosage.—All the implants used in this series of cases were supplied by Organon Laboratories, Ltd. At different times methyl-testosterone, simple testosterone, and testosterone propionate have been used in implants of 25 and 50 mg. strength. Methyl-testosterone implants are not a standard product and are not supplied commercially. Of the other two forms testosterone propionate is reputed to have a longer lasting action than simple testosterone but at the same time to be less well tolerated by the animal tissues—it is said to provoke a greater local reaction with consequent increased risk of extrusion. No difference in the action of implants of the two products was noticed in this series of cases, however.

The rate of absorption of testosterone from an implant is in direct proportion to the surface area of that implant at any given time. A 25 mg. implant is totally absorbed in approximately four months. A 50 mg. implant is manufactured to a larger size and consequently gives a higher initial rate of absorption, but it is still totally absorbed in approximately five months; thus, whilst this stronger implant gives very nearly double the rate of absorption on an average over the whole period, the length of the treatment it provides is not significantly greater than that provided by a 25 mg. implant.

A 25 mg. implant gives an adequate rate of absorption for the majority of cases. Whilst the treatment will be equally successful if a 50 mg. implant is used, the intensity and duration of the undesirable side-action produced on the cat's temperament will then be greatly increased. Thus, since no prolongation of treatment is secured by using the stronger implant, this should be reserved for use only for stubborn cases in very large cats.

Sequelae and Prognosis

Although it is possible to determine by palpation that the whole of the bulk of the implant is absorbed after four or five months, it is reasonable to expect the beneficial effects of the treatment to last for a considerably longer period. Of the 42 cases which have been treated in this way, the following is a summary of the results :—

3 Failures :—	
Cases showing :	
No response	2
Only partial cure	1
36 Successes :—	
Cases showing complete cure :	
which required further treatment	
after less than 6 months	3
„ 6 to 9 months	8
„ 9 „ 12 „	18
„ 12 „ 15 „	3
which did not require further treatment	
within first 24 months	4
3 cases which could not be followed up ...	3
	42

It thus seems that once having been cured by treatment, a cat is then able to remain in a good condition for a period of time which depends on some intrinsic factor—doubtless the level of predisposition which its own particular diet and conditions of general management are capable of producing. No doubt those cases which did not break down again after treatment and which never required a further implant were cases where the predisposition level was low and which would not have become clinical cases in the first instance had it not been for some violent exciting cause.

All cases which received implants on two or more occasions (second and subsequent treatments are not included in the above analysis) broke down and required further treatment after the same period of time on each occasion, *i.e.*, the interval between implantations did not increase. Possibly any permanent improvement resulting from initial treatments is counterbalanced by some form of tolerance which develops. It would be interesting to see whether the use of a more concentrated implant on, say, the third treatment would allow this interval to be increased.

AFTER!

Conclusions

I believe that this treatment can safely be adopted for all cases of miliary eczema in castrated male cats. It is not to be regarded as a sole

treatment but should only be used to replace the oral administration of hormone extracts in the multiple treatment outlined earlier. It is an economic proposition for the average client to allow continuous implantation treatments to be used for cases where one implant will keep a cat in good condition for about a year, but the same cannot be said for those cases which require fresh treatments every six months or less. In all cases I suggest that an initial trial implantation should be carried out and the possibilities with regard to prognosis explained to the client. Most clients readily agree to this course as the burden of treatment is entirely removed from their shoulders.

Acknowledgments.—I wish to thank Professor N. J. Scorgie, M.A., B.Sc., M.R.C.V.S., who first suggested this line of treatment to me and who guided me through the first few cases which were so treated ; Organon Laboratories, Ltd., who provided the first few implants free of charge before this treatment became routine in my practice ; Miss Margaretta Stille, who drew the charming but nevertheless clinically accurate illustrations ; and Mr. H. A. Burgess, of the Department of Histology of the Royal Veterinary College, who photographed these.

CLINICAL COMMUNICATION

KERATITIS IN CATTLE ASSOCIATED WITH THE PRESENCE OF THELAZIA SPECIES

K. S. MITCHELL and A. L. HUGHES
Hay-on-Wye, Herefordshire

During August and September of this year about 50 cattle examined showed varying degrees of keratitis. The condition was seen mainly in Herefords, but other breeds were affected. The ages of the animals concerned varied from three months to six years and the disease has been seen in three counties.

As many as 20 cattle have been affected on one farm. In some places a group of adjacent farms have been found to have cattle suffering from the disease, which occurs both on lowland pastures and marginal land.

Usually the owner's attention is drawn to one or more animals showing some degree of lachrymation. When examined more closely, early cases show a shallow ulcer on or near the centre of the cornea ; later the whole of the cornea becomes milky and opaque and total blindness follows. One or both eyes may be affected.

As healing takes place the ulcer shows well-defined edges and the centre becomes elevated. The condition lasts four to six weeks before the eye returns to normal.

Some loss of condition is evident but the animal does not seem to be greatly disturbed.

At any time during the course of the disease a nematode worm may be seen moving across the cornea or conjunctiva.

One specimen sent to the Ministry of Agriculture and Fisheries Laboratory was identified as Thelazia sp. Although the writers have never seen these worms in normal eyes, they understand that they are frequently to be found in the conjunctival sac, and that, indeed, these parasites are much more prevalent in this country than is generally recognised.

"ANAVENOL"-K ANAESTHESIA

Some Points from a Discussion Following the Showing of a Film on "Anavenol"-K Anaesthesia to the Autumn, 1952, Meeting of the North of Scotland Division at Inverness

Following the showing of the film, which was introduced by Mr. W. T. Harrow of I.C.(P.), the discussion was opened by Mr. A. J. MacLennan, of Inverness, who began by congratulating I.C.I. on an excellent film and offering the thanks of the meeting to Mr. Harrow for coming so far to compère the film.

Mr. MacLennan went on: I shall try to discuss this anaesthetic from the practitioner's point of view, and to begin with, I will quote a brief survey of the types of conditions in practice where we have derived benefit from the use of "Anavenol"-K intravenously. To date our case records show that we have used this drug in:—

Sixty-eight instances in the bovine.
Fifteen instances in the horse.
Two instances in the sheep.
One instance in the pig.

Bovine :

Forty-nine cases (38 cows and 11 bulls) of animals requiring attention to feet, *e.g.*, paring down of deformed and overgrown feet, opening and draining of under-run soles, etc.
Three cases of teat surgery.
Three cases of dehorning.
Two cases of caesarean section.
One case of evisceration of the orbit.
One case of amputation of a digit.
One case of removal of an interdigital growth.
One case of paraphimosis in a bull (anaesthetised on two occasions).
One case of amputation of a prolapsed rectum in a calf.
One case or haemorrhage following lay castration.
One case of castration in a bullock.
One case of an extensive leg wound in a cow with a piece of wire deeply embedded.
One case of a persistent interdigital sinus in a calf.

Horse :

Seven cases of castration of yearling colts.
One case of castration of a three-year-old colt.
Four cases of castration of ponies.
One case of a Clydesdale filly with an extensive "granuloma" on the lateral aspect of the hock.
One case of extensive "under-running" of the sole and wall of the foot in a Clydesdale mare (anaesthetised on five occasions).

Sheep :

One case of limb fracture.
One case of tumour removal in a six-week-old Border Leicester ram lamb.

Pig :

One case of scrotal hernia in an eight-week-old piglet.

Apparatus.—For injecting the drug we have used a 50 c.c. syringe in the large animal with one or two full syringes ready, depending on the amount required. I have found a rubber connection with a needle adaptor attached of great advantage.

Anaesthesia.—In some cases surgical anaesthesia has been very good. In other cases it has been very light. Personally I find difficulty in assessing the different stages of anaesthesia by resorting to the normal reflex tests. In fact during induction I feel that a stage of apparent surgical anaesthesia is reached which needs to be augmented quite considerably in some cases before actual surgical interference can be attempted. In this connection I am now quite convinced that the rate of induction is the all-important factor in reaching a stage of adequate anaesthesia, and in these cases where I have required to supplement with further amounts of "Anavenol"-K, I am quite sure my induc-

tion has been too slow. I may say here I still experience some trepidation when I require to augment this apparent deep anaesthesia.

I have found that fasting for 12 hours greatly facilitates induction and the resulting anaesthesia. I can best illustrate this by the following case report:—

The subject was a 14-month-old Clydesdale filly (good-sized) with a chronic infected granulating mass, the size of a man's fist, on the outside of the right hock. She was fasted for 12 hours and 160 c.c. of "Anavenol"-K injected into the jugular vein, taking two and a half minutes for injection. No means of restraint were applied and there was complete surgical anaesthesia for 20 minutes, during which time the site was clipped, cleaned, and swabbed with antiseptic, and the mass removed by actual cautery, with complete absence of sensation. Fifteen minutes later the filly was raising her head, neighing and coughing. Ten minutes later she got up to her feet with assistance. Fifteen minutes later she walked away quite normally. Total time from start to finish—just over one hour.

Remarks.—I have found "Anavenol"-K very useful in cattle practice. It is safe, can be used on the spot in an emergency, can be used single-handed, and in my experience has no untoward sequelae. Even in heavy lactating animals the milk yield is not upset. One disadvantage at present is the high cost of the drug, but on the whole we have found our clients very reasonable, more especially so if they have seen it used.

Most of our cases recorded have been "feet" cases in cows and bulls which have proved difficult to handle. In such cases "Anavenol"-K has been primarily employed as a means of restraint, and as long as the feet could be easily dressed, there was no need to maintain complete anaesthesia.

In the operation of caesarean section in the bovine I have achieved very satisfactory anaesthesia with this drug, and recovery has been speedy and uneventful. In one case in a British Friesian heifer with an anasarcous foetus where the animal was very toxic, anaesthesia was maintained over a period of three hours and at least 350 c.c. of "Anavenol"-K were administered without any untoward effect.

In the case of amputation of the bovine digit mentioned, anaesthesia was again good, but having no anaesthetist on this occasion I experienced the snag of leaving the operation site at intervals to maintain anaesthesia.

In removing the eyeball from a cow, in spite of what I considered fairly deep anaesthesia, sensation still seemed to be quite markedly present on cutting through the eyelids and associated structures, and I had to supplement it with local infiltration.

Horse.—I have found "Anavenol"-K very suitable for short-lasting anaesthesia in the horse for operations like castration, especially in small ponies. I have experienced no untoward effects in the horse but I should like to hear what Mr. Harrow has to say about the use of this drug for very prolonged anaesthesia in the horse.

Sheep.—My experience again is very limited in this species but results so far have been promising. Let me quote one case of a well-developed Border Leicester ram lamb, six weeks old, with a large melanoma (on removal it weighed 6 lb.) situated over the shoulder region. By slow intravenous injection of 39 c.c. of "Anavenol"-K ideal anaesthesia was attained, and lasted for a period of one hour. Two hours later this lamb walked out of our yard quite normally.

I certainly intend to use "Anavenol"-K for any caesarean cases I may have to do in any ewes next spring.

Pig.—I have used this drug in only one case of scrotal hernia in an eight-week-old piglet. Anaesthesia was much too brief to be of any value in this particular case and I experienced considerable difficulty in injecting the suspension into the ear vein.

I should like here to express my sincere thanks to my partner, Mr. A. Riggs, M.R.C.V.S., and our assistants, Mr. K. Murchie, B.SC., M.R.C.V.S., and Mr. W. E. J. Warnes, B.SC., M.R.C.V.S., for permission to quote some of their cases in my survey.

Several members of the Division then spoke, and finally Mr. Harrow replied.

Mr. Harrow congratulated Mr. MacLennan on opening the discussion so ably and dealt firstly with the use of "Anavenol"-K in the horse. He had to admit, he said, that his experience in that species was less extensive than it was in cattle, and mainly limited to short anaesthesias such as for castration. He had, however, discussed the subject with numerous practising veterinary surgeons and the consensus of opinion seemed to be that while results were not, generally speaking, as good in the horse as in cattle, the drug was a definite advance on other agents. This was particularly so in respect of induction, and recovery from short anaesthesias. In long anaesthesias, where more than one maintenance dose had to be given, there was in some horses a tendency to "barbiturate hangover" with a period of inco-ordination. This period was appreciably shorter than with chloral or the barbiturates alone, but was to some extent a disadvantage. As regards toxicity, no anaesthetic yet discovered was 100 per cent. safe, although "Anavenol"-K seemed to be very nearly that in cattle. In the horse, however, there appeared to be some degree of individual idiosyncrasy to the drug especially in light horses, and more particularly in the thoroughbred. A number of veterinarians in racehorse practice used the drug very frequently with great confidence, but a small number of fatalities had been recorded in this class of animal. All had been blood horses, all had been outside the British Isles, and in every case the cause of death had been right heart failure, with acute pulmonary oedema and death within a very short time. Bearing in mind the large number of anaesthesias in which the drug had been used and the circumstances of these particular cases, the only explanation seemed to be idiosyncrasy. He would put the degree of risk in the light of present experience on a par with that of using phenothiazine in blood horses.

The second point dealt with concerned calves following caesarean section.

There had been two or three cases reported in which the live calf produced by caesarean section under "Anavenol"-K was semi-anaesthetised, coughing and discharging from the nostrils a considerable quantity of white fluid similar in colour and consistency to the drug itself. Mr. Harrow had been asked if this fluid was, in fact, the drug being excreted through the lungs but he thought that this was virtually impossible, since the characteristic appearance of "Anavenol"-K was due to its being a suspension of particles. From the observed clinical effects of the drug it was taken up by the nervous system almost immediately it was injected, and none of the particles could subsequently be detected anywhere in the body. It was extremely unlikely that it would be excreted in exactly the same chemical and physical form as it was injected, particularly since this would mean the passage of solid particles into the alveoli of the lung. The true explanation was, he thought, that the calf inhaled appreciable quantities of amniotic fluid during the process of extraction and it was this, filled with large quantities of small air bubbles, which constituted the white fluid. A continental worker, who was shortly to publish a paper on over 100 caesarean sections under this anaesthetic, had observed this inhalation of amniotic fluid, and had in fact collected as much as a pint and a half from one calf, which finally survived. Incidentally, the calf mortality in this series was the same as in others performed under epidural and local anaesthesia. Inhalation of amniotic fluid by the foetus during caesarean section was known in human obstetrics.

Mr. MacLennan had mentioned salivation and coughing in ruminants under the anaesthetic and asked if pneumonia had been known to follow. Mr. Harrow had not heard of any ill effect of this nature and thought that the coughing was in fact a safeguard against it. He had found that both excessive salivation and coughing could be markedly reduced by starving the animal wherever possible for 24 hours before operation.

As regards a preferred apparatus Mr. Harrow himself always used hypodermic syringes of 100 c.c. capacity, and found, strangely enough, that breakages were very infrequent. He knew that a lot of people used a standard type of "calcium injector" with success but he thought it more difficult to regulate the speed of injection by this means. Flutter valves did not allow a fast enough flow of the suspension, and automatic syringes employing ball valves tended to stick at awkward moments.

THE ROYAL ZOOLOGICAL SOCIETY OF SCOTLAND

This Society, compared with the Zoological Society of London, is yet young, having been founded only 44 years ago in 1909. It is, however, the only Zoological Society in the United Kingdom with the appellation "Royal" and it is justly proud of that honour which was conferred in 1948.

Edinburgh Zoological Gardens were opened in 1913 as a result of the efforts of a distinguished group of Scottish citizens, among whom were Lord Salvesen, the Society's first President, W. Spiers Bruce, Esq., Professor J. Cossar Ewart, J. A. Harvie Brown, Esq., Professor J. Graham Kerr, Professor J. Arthur Thomson and T. H. Gillespie, Esq. This was despite the many difficulties caused by an atmosphere of acute international tension, and it says much for the vision and enthusiasm of these gentlemen that the Society's Zoological Gardens ever came into being at all.

Constitutionally, the Society was modelled on that of London, which had already been flourishing for 80 years, but the type of animal husbandry and the layout of the grounds were new to Britain. Mr. Gillespie, who was Director-Secretary of the Gardens from their inception until 1950, planned the enclosures on naturalistic lines, using large grass paddocks, concealed barriers, natural rock features and a number of other devices which have since become common practice.

Throughout its short history the Royal Zoological Society of Scotland has maintained close liaison with the Royal (Dick) Veterinary College and with the University of Edinburgh, members of the staffs of both these organisations being represented on its Council and committees at various times. After the last war, however, it was considered that advantage would be gained by the employment of a full-time Veterinary Officer and, as an initial step, an arrangement was entered into with the Animal Health Trust whereby a post-graduate veterinary surgeon would receive an A.H.T. Fellowship for routine work and research at Edinburgh Zoo.

At the conclusion of the Fellowship period a more permanent arrangement was reached between the Society and what is now the Royal (Dick) School of Veterinary Studies, an integral part of the University of Edinburgh. As a result of this arrangement the Society's Veterinary Officer has full use of the School's many facilities while the University has more ready access to the wealth of material available for teaching and research purposes.

The Veterinary Officer is responsible for most of the clinical and all the pathological work and this allows a continuity of approach not otherwise possible. In addition, the close association with the Veterinary School permits of the storage and full utilisation of the considerable quantity of comparative pathological and anatomical material. Much of this is already regularly dispatched to various workers in many parts of Britain.

The President of the Society is Lord Rosebery, and the Vice-Presidents include Professor F. A. E. Crew, who is known to the profession particularly for his genetical studies of the "Bulldog calf," and Emeritus Professor James Ritchie, until recently Professor of Natural History of the University.

The present Director-Secretary, Mr. Donald Bowles, is a zoologist and is particularly interested in the scientific approach to the problems of keeping wild animals in captivity. Since his arrival much has been done to repair the inevitable structural decay which occurred during the war years. If the Society receives the public support to which it is entitled, for, like London, it gets no grants or subsidies, there is no doubt that Edinburgh Zoo will maintain and even improve its reputation for scientific originality and the excellence of its collection.

E. C. A.

ABSTRACTS

Oedema of the Bowel in Pigs*

Although this disease has become much more common since the war there are records of its having existed even before the first world war.

This article may be described as a dissertation, surveying as it does the various aetiological hypotheses of oedema in pigs, and their validity in the light of the author's wide experience of the disease. Infection, allergic shock, acute obstruction of the bowel and excess protein feeding are all reviewed, but no firm conclusions are reached.

It is usually the best and greediest pigs which are affected, and attention is drawn to the similarity in this respect to pulpy kidney disease in lambs. *Post-mortem* examination, however, does not suggest enterotoxaemia.

Great stress has been laid on the importance of heavy feeding as a precipitating cause, and the value of reducing the diet to a minimum, at least for a few days, at the beginning of an outbreak is borne out by the success achieved in practice. On the other hand, for physiological reasons outlined by the author, an ample supply of water would seem desirable and the tendency to advocate changing from wet to dry mash contra-indicated. Once the plasma proteins have commenced to pass into the oedematous fluid osmotic pressure is raised and more fluid is likely to follow. The restoration of a proper water balance might well be prejudiced if the blood volume is reduced and water reserves are depleted. All the pathological effects might be aggravated by a water lack although efforts to adjust the water balance of the body in the later stages of the disease may in any case be useless.

Pharmacologically magnesium sulphate treatment would seem to be justified. Water will be drawn into the bowel, soften the contents and provoke gentle purgation. Dilute solutions are less valuable. The author is carrying out investigations himself with a mercurial diuretic and some success has been achieved by this drug used in conjunction with adrenalin, which stimulates a withdrawal of fluid from the extravascular tissues. Constriction of peripheral capillaries and a rise in blood pressure seem to be what is required.

Reference is made to the cold water bath method and the effects of actual handling, both procedures of course stimulating the flow of adrenalin. It is considered that if more information were available regarding the histamine and pyruvic acid levels in the blood and tissues in this disease further research would benefit greatly.

The following additional methods of treatment are considered:—

1. Intramuscular Streptomycin.
2. Intravenous human blood plasma or Dextran.
3. Intramuscular Phenergan.
4. Anthisan with carbachol, followed by cold water douche.

*** Thoughts on Oedema of the Bowel in Pigs.** Loosmore, R. M. (1953). *State Veterinary Journal.* **8.** 61–66. Abstracted from this privately circulated periodical by permission of the Editor.

Whilst the above treatments proved generally ineffective, large doses of Epsom salts achieved moderate success. Vitamin B injections were useless as also was a change from wet to dry feeding.

In the author's experience the most successful method of control was to run weaner pigs out of doors, some simple form of shelter being provided. Under these conditions losses were low as compared with those which occurred with indoor housing methods. In one instance, the enforced return of the animals to indoor conditions precipitated further losses. It is suggested that perhaps the additional exercise counteracts the ill effects of any over-feeding, which in so many cases seems to be a frequent precursor of this elusive condition.

N. S. B.

* * * * *

A New Type of Rabies Vaccine*

This article describes in general terms a new vaccine against rabies marketed by Lederle Laboratories and its use for immunising dogs. The Flury strain of rabies, obtained by passing intracerebrally in day-old chicks from a fatal human case, was used to initiate growth of rabies virus in embryonated eggs. Sufficient passes in eggs resulted in virus attenuated for mammals, yet retaining its antigenic properties. This agent is issued as a freeze-dried product and used for immunising dogs by the intramuscular route. No losses attributable to the vaccine were encountered in more than 150,000 dogs vaccinated with it and thus it does not appear to occasion post-vaccinial paralysis as do vaccines composed of nervous tissue. A single vaccination induces a solid immunity lasting more than a year, whereas the immunity induced by formalised nervous tissue containing street virus lasts for less than a year. The freeze-dried product is relatively stable.

A. W. G.

* **A New Type of Rabies Vaccine.** (1953). *J. Roy. Army Vet. Corps.* **24.** 51–57.

* * * * *

Blood Groups in Dogs: Their Significance to the Veterinarian*

This paper is a summary of the results of an intensive study of blood groups in dogs.

Five different iso-antibodies were demonstrated in serums from transfused dogs and were called anti-A, -B, -C, -D and -E in the order of their demonstration, and the corresponding antigen in canine erythrocytes called the canine A (B, etc.) factor. The authors give a table showing the frequency with which erythrocytes from random mongrels react with these five types, and since these five types were also found to react independently with erythrocytes, there is a table showing the frequency of combinations of types.

Naturally occurring iso-antibodies were found in about 15 per cent. of dogs never transfused. Half of these were anti-D and the others were anti-B and of specificities not yet identified. The possibility that iso-antibodies might be found in some dogs following artificial immunisation against infectious diseases has not yet been investigated.

Studies of inheritance suggest that each factor is gene determined but there is no evidence that any of the factors are linked or allelomorphic with any other factor.

The importance of the canine A factor in planning transfusion is stressed. It was found that 63 per cent. random dogs have erythrocytes containing this factor. It is highly antigenic and also occurs in degrees of reactivity and can produce a weaker antigen (A^1) which may not be detected in routine typing of cells. Anti-A is a potent lysin and its formation may cause severe reaction within an hour or the destruction of donated cells after seven days or more. This incompatibility can be avoided by cell testing with potent anti-A serum and by taking the precaution to use only A-negative dogs as donors. The technique for this is given in detail as is the technique for cross-matching blood. The other antigenic factors are of little importance with respect to transfusion incompatibility though routine cross matching is recommended.

Haemolytic disease in newborn pups is caused by the ingestion of maternal iso-antibodies from the milk during the first 24 hours only of suckling and haemolytic anaemia has been regularly observed in A-positive pups born to A-negative bitches given transfusions of A-positive blood, and though natural iso-immunisation of the bitch during pregnancy may occur without transfusion and is a problem deserving further investigation, the authors conclude that haemolytic disease in pups might be seen frequently if indiscriminate transfusion should be used in treating canine casualties.

All these studies were made on random mongrel dogs and the authors expect interesting data will be obtained when the blood groups of pure-bred dogs can be investigated.

J. C. H.

* **Blood Groups in Dogs : Their Significance to the Veterinarian.** Young, L. E., *et al.* (1952). *Amer. J. vet. Res.* **13.** 207–213.

* * * * *

Canine Penicillin Blood Levels Obtained with Parenteral Benzethacil*

The administration of a single, intramuscular dose of 300,000 units of benzethacil (NN′-dibenzylethylenediamine dipenicillin G) to two groups of medium-sized dogs ranging from eight months to two years, resulted in blood serum penicillin levels for from 8 to 15 days.

Two graphs of results are given. In the first, the preparation reaches its highest level between 0·10 and 0·20 I.U. penicillin per c.c. of serum compared with 1·5 and 4·0 of procaine penicillin G and potassium penicillin G given in similar doses. In the second, the preparation gives a higher level of 0·45 I.U. penicillin per c.c. of serum.

Abstractor's Note.—These levels, though maintained much longer, are low compared with those of the shorter acting standard preparations of penicillin in use.

J. C. H.

* **Canine Penicillin Blood Levels Obtained with Parenteral Benzethacil.** Glenney, W. C., Batory, C. F., & Huebner, R. A. (1952). *Amer. J. vet. Res.* **13.** 555–556.

FOG PRECAUTIONS FOR SMITHFIELD SHOW

As a precaution against recurrence of the cold and smoky fog that caused several casualties among animals exhibited last year, the organisers of Smithfield Show have arranged this year for some of the entrances of the exhibition hall at Earl's Court, W., to be equipped with baffles. It is also hoped that the provision will reduce the effects of draughts in the spaces where the stock are to be penned.

The show will begin on December 7th and continue for five days. Livestock entries number nearly 1,250, excluding 316 special entries of cattle, sheep and pigs for carcase competitions. The Queen will show two Red Poll steers from Sandringham, and two Devon steers have been entered by the Duke of Cornwall.

REVIEW

[**Advances in Veterinary Science,** Vol. I. Editors: C. A. Brandly and E. L. Jungherr (21 contributors). Pp. vii—431. Academic Press, Inc., New York. 72s.]

This volume is intended to be the first of a series of books devoted to a description of advances in Veterinary Science. The production of this series is under the direction of an Advisory Board consisting of seven veterinarians who each, in his own sphere, possesses an international reputation. There can be no doubt that the idea of producing such a series on Advances in Veterinary Science is a thoroughly commendable one and, knowing the composition of the Advisory Board, it was to be expected that the first volume would be an outstanding contribution to veterinary literature. It is, therefore, with the greatest regret that the writer of this review has to express profound disappointment with both the choice of subject and the manner of presentation of the subject matter in this first volume. Indeed it is difficult to believe that the Advisory Board were fully consulted during the production of this volume. It is easily realised that the selection of subject matter for such a volume entails some personal bias but it would surely have been possible to avoid the overlapping and repetition that occurs between the different sections of the book. The general impression formed on reading the book is that a more appropriate title would have been "A Review of Veterinary Science," Volume I. Not by any stretch of imagination can some of the sections be said to describe advances that have occurred this century and, still less, advances that would merit the description "Recent Advances."

The book consists of eight main sections with an Author Index and a Subject Index. The first section of 40 pages deals with Animal Diseases and Human Welfare. The first part of the section consists of an historical survey of the knowledge of the connection between animal disease and human disease. This part of the section, which goes back to the pre-Christian era, is neither complete nor accurate. There then follows a list of diseases of animals communicable to man with a brief dissertation on the general characteristics of the various groups into which these diseases can be placed. Certain selected diseases are then described in rather more detail but the descriptions are so incomplete as to be of little help to the average reader. For instance, tuberculosis is discussed on one page and six lines, rabies receiving a page and a half. Six pages are devoted to a consideration of the economic importance of animal diseases and there is again produced one of those tables purporting to show the annual economic loss from animal disease. The section concludes with nine pages of references.

The second section deals with Virus Diseases and succeeds in doing so in 12 pages with four and a half pages of references. This section might very well be described as an incomplete review of the position of our knowledge of virus diseases in general. There is one rather extraordinary omission, in that no mention is made of the outstanding progress in our knowledge of foot-and-mouth virus as a result of the work at Pirbright.

The third section deals with the Sulfonamides. This consists of 50 pages of text and 11 pages of references. In an endeavour to deal with all sulfonamides, many of the less important ones receive a disproportionate amount of attention. The subject matter is presented largely in the form of abstracts from the references and no attempt seems to have been made to correlate the statements thus presented. In consequence, the reader is left in considerable doubt as to the value of a particular compound.

The section on Antibiotics consists of 30 pages of text plus 12 pages of references. Eleven antibiotics are dealt with. There are many errors in this section which suggest that the survey of the literature was very cursory. For instance, all credit for penicillin and its application is given to Fleming and no reference is made to the work of Florey and his colleagues.

The section on the Infertility Problem of Cattle consists of 36 pages with five pages of references, the subject matter being dealt with in a very superficial manner.

The section on Bovine Mastitis is outstanding and it is unfortunate that the other sections of the book do not come up to the same standard. The section is broken down into nine parts and in each of these parts, following a discussion of the subject matter, there is a paragraph of comment. The section ends with a comprehensive summary. The result is that this section is useful and informative. It is also striking that the writer of this section has surveyed the world literature and has not, as appears to be the case in some of the other sections, confined attention to American literature only.

The section on Swine Diseases endeavours to cover such a large field that inevitably it only succeeds in presenting very incomplete information. For instance, on Piglet Anaemia, the only information given is contained in the following paragraph: "Of all the anemias that cause mortality in swine, nutritional anemia due to iron deficiency or iron and copper deficiency, still causes the greatest economic loss, at least in the northern half of the United States. It is possible that iron deficiency is the most common of all deficiencies and takes the greatest toll. This is a peculiar circumstance because this type of anemia has been well understood for years and even long before it was understood, it was recognised that the placing of fresh soil in the farrowing pens prevented the anemia. The writer well recalls the first case of iron deficiency of suckling pigs that came to his attention over 30 years ago. Even at that time it was possible to propose exact means whereby the condition could be prevented and cured."

The section on Public Health confines itself very largely to a brief description of public health measures in the United States and a description of the activities of the World Health Organisation and the Food and Agriculture Organisation of the United Nations. Then follow a series of brief reviews of certain selected diseases of animals communicable to man.

The section on Rabies, though brief, is interesting in so far as it reveals that the control of rabies in the United States has not yet made very great progress.

Had this book attained the standard one might reasonably expect, it would have been of great help to many sections of the veterinary profession, but, as it stands, it is difficult to say which section would benefit by its perusal. The student would find it of little help and might get an inaccurate picture of many important conditions. The practitioner will hardly be attracted by a book like this and the teacher should already be in possession of more accurate and more up-to-date information than the book furnishes. The research worker may find the list of references useful if he realises that they are, with perhaps one exception, incomplete. It is to be hoped that the Advisory Board will take steps to ensure that any further volumes in this series do not suffer from the defects mentioned in this review.

QUESTIONS IN PARLIAMENT

Artificial Insemination Centres

Sir W. Wakefield (November 26th) asked the Minister of Agriculture why the amount to be spent on artificial insemination is being increased; and why this service cannot be self-supporting.

Mr. Nugent: The increase in expenditure in connection with the two artificial insemination centres maintained by my Department is being incurred for the purchase of additional bulls, and the provision of pens to accommodate them, in order to meet the growing demand for artificial insemination. These centres are unlikely to become self-supporting because their primary purpose is to conduct research into problems connected with artificial insemination.

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Myxomatosis

Mr. de Freitas (November 26th) asked the Minister of Agriculture what action he is taking to prevent the spread of myxomatosis, a virus disease of rabbits; and why he is taking this action.

Mr. Nugent: I would refer the hon. Member to the replies given on November 12th to the hon. and learned Member for Brigg (Mr. E. L. Mallalieu) and the hon. Member for Derbyshire, West (Mr. E. Wakefield).

Mr. de Freitas: Yes, but does the hon. Gentleman remember that the Minister told me, in answer to a Question many months ago, that they were researching into its effect in an island, I think, off the coast of Scotland? In view of this concern and the wide experience of this disease in France and Australia, cannot the Ministry make up its mind whether or not to allow rabbits to be killed by this means?

Mr. Nugent: As my right hon. Friend told the House, he has set up an advisory committee to consider where the balance of advantage lies, and, in the meantime, such outbreaks as are discovered are immediately being contained in the hope of keeping the disease under control to a considerable extent.

Mr. de Freitas: Does the hon. Gentleman realise that it is the delay on the part of the Minister in making up his mind of which I am complaining?

Mr. Nicholson: Is my hon. Friend aware that to permit or encourage the spread of this disease would be repugnant to most sections of opinion in this country?

MILK MARKETING BOARD FELLOWSHIP

The Board has made a grant (to cover salary, laboratory materials and expenses) for a period of up to three years to Bristol University for the appointment of a qualified research worker to study *Vibrio fetus*, the organism which is believed to be associated with outbreaks of sterility in this country and which is probably spread venereally.

Miss J. M. Bond, B.Sc., was appointed to the Fellowship and took up her duties on August 1st, 1953. She will pursue a programme of work drawn up by Professor Blakemore, Director of Veterinary Studies, and Professor Cooper, Professor of Bacteriology. Her work will be related in the first instance to a systematic study of the bacteriology of a collection of strains of *Vibrio fetus* received from outbreaks of the disease in this country and on the continent. It is believed that this fundamental work will prove a satisfactory basis for an investigation into the significance of Vibrio infection as a factor concerned in the causation of reproductive disorders.

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COLLEGE OF TROPICAL AGRICULTURE

Professor Sir Frank Engledow has been appointed Chairman of the Governing Body of the Imperial College of Tropical Agriculture, from January 1st, 1954, in succession to Sir Raymond Priestley, who is resigning on account of ill-health.

Sir Frank Engledow is Drapers' Professor of Agriculture, Cambridge University, and a member of the Agricultural Improvement Council of England and Wales, and from 1942 to 1947 served on the Agricultural Research Council His agricultural travels have extended to many countries, and in 1938-39 he visited the college as a member of the West Indies Royal Commission. From 1929 to 1949 he represented Cambridge University on the Governing Body, of which he now becomes a co-opted member.

NOTES AND NEWS

Diary of Events

Dec. 9th.—Meeting of the Editorial Committee, B.V.A., at 36, Gordon Square, W.C.1, 2.30 p.m.

Dec. 10th.—Meeting of the Essex Veterinary Society, at the Essex Institute of Agriculture, Writtle, 7.30 p.m.

Dec. 12th.—Meeting of the Biochemical Society, in the London Hospital Medical College, Turner Street, E.1, 11 a.m.

Dec. 15th.—Royal College of Surgeons of England: Imperial Cancer Research Fund Lecture by Dr. C. le Q. Darcel, M.R.C.V.S., at 3.45 p.m., on "The Comparative Pathology of Leukotic Conditions in Man and Fowl."

Dec. 16th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, to be held jointly with the Section of Ophthalmology, at 1, Wimpole Street, W.1, 5 p.m.

Dec. 16th.—Meeting of the Royal Microscopical Society at Tavistock House South, Tavistock Square, W.C.1 (Dr. R. W. G. Wyckoff, Hon. F.R.C.V.S.,: "The Electron Microscopy of Viruses"), 5 p.m.

Dec. 17th.—Annual Dance, Dumfries and Galloway Branch of the V.Y.B.F. Ladies' Guild, at the Cairndale Hotel, Dumfries.

Dec. 18th.—Meeting of the Midland Counties Division, B.V.A., at the Birmingham Medical Institute, 154, Great Charles Street, 2.30 p.m.

Dec. 18th.—Meeting of the Sussex Division, B.V.A., at Brighton (Old Ship Hotel), 2.30 p.m.

R.C.V.S. Membership Examinations

Dec. 10th.—M.R.C.V.S. Written Examinations.
Dec. 11th.—M.R.C.V.S. Written Examinations.
Dec. 14th.—M.R.C.V.S. Oral and Practicals commence (Panels "A" and "B").

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Change of Date of Next Meetings of Council and Committees, B.V.A.

Owing to the fact that headquarters will be moving to 7, Mansfield Street just before Christmas the meetings fixed for early January (6th, 7th and 8th) have now been postponed until Wednesday, Thursday and Friday, January 20th, 21st and 22nd, 1954.

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PERSONAL

Births.—Hughes.—On November 3rd, 1953, at Dulas, Cusop, Herefordshire, to Molly and Arthur Lance Hughes, a son—Robert John, brother to Leslie Anne.

Lloyd.—On November 26th, 1953, to Dilys, wife of Huw G. Lloyd, M.R.C.V.S., a son—a brother for Frederick.

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Marriages.—Andrew—Bateman.—The wedding took place at Northaw Parish Church on Saturday, November 28th, between Angus Sinclair Andrew, M.R.C.V.S., of Bellshill, Lanarkshire, and Sheila Frances, second daughter of Mr. J. K. Bateman, B.Sc., M.R.C.V.S., and Mrs. Bateman, The Hook, Northaw, Potters Bar. The best man, who, like the bridegroom, was in Highland dress, was Mr. James Lamond, M.R.C.V.S., and the reception was held at the bride's home. Amongst the guests were the following members of the profession: Major John Going, Messrs. A. A. Marshall, A. J. Skea, F. E. Somer and B. O. E. Walpole.

Ornbo—Adderley.—On December 5th, 1953, at St. Mary and All Saints' Church, Fillongley, Coventry, Margrethe Ann Ornbo, M.R.C.V.S., to Wing-Commander the Hon. Michael Charles Adderley, A.F.C., R.A.F.

R.C.V.S. OBITUARY

Bickerton, Roy Cleon, M.R.C.V.S., Captain late R.A.V.C. (T.F.), of White Gates, Berry Bank Road, Grange-over-Sands, Lancs. Graduated Glasgow, December 21st, 1903. Died November 29th, 1953; aged 72 years.

Blakeway, James, M.R.C.V.S., Stoneleigh, South Avenue, Stourbridge, Worcs. Graduated London, April 2nd, 1879. Died November 9th, 1953; aged 93 years.

Spurgeon, Charles Henry, M.R.C.V.S., Fairfield Cottage, High Street, Petworth, Sussex. Graduated London, July 24th, 1896. Died November 22nd, 1953; aged 80 years.

Mr. James Blakeway, M.R.C.V.S.

At the great age of 93 years, Mr. James Blakeway, who passed away in a nursing home at Stourbridge, headed the revered list of Chirurgorum Veterinariorum Collegii Regii Seniores, for he qualified from the London College in April, 1879. He was buried at Stourbridge, where he once had a flourishing practice. Mr. Blakeway was primarily a horse practitioner who later tolerated cattle, but found it hard to swallow small-animal work. He specialised in the rig operation, and after the first world war sold his practice to Mr. J. Robertson, M.R.C.V.S.

Mr. Blakeway then became Chief Veterinary Surgeon to Messrs. Marsh & Baxter Ltd., from which post he retired in June, 1929. For many years past he had been in failing health.

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Mr. Charles H. Spurgeon, M.R.C.V.S.

A Tribute

His many friends and admirers throughout this beautiful area of West Sussex will receive with much regret the news of the death of Mr. C. H. Spurgeon, which occurred at Petworth on November 22nd, after a long period of incapacity and illness.

Mr. Spurgeon came to Petworth in 1901 and established an extensive practice and great reputation in the area. In his professional capacity his opinion was sought and respected throughout West Sussex; his patience and care in dealing with each case was most remarkable and he was always prepared to pass on the fruits of his experience to the younger generation. He was a great sportsman, hunting regularly with the Leconfield Hunt and playing cricket for Petworth.

With his passing the profession loses yet one more of the really great equine practitioners. To his wife we extend our sincere sympathy.

R. G. T. C.

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The Late Mr. Jas. T. Taylor, M.R.C.V.S.

An Appreciation

I first met the late J. T. T. when he was a "Special" with me at a foot-and-mouth centre in Gainsborough early in 1924. From the latter we had an all-night drive to a centre at Deal, during which he kept me awake at the wheel by his cheery conversation and anecdotes.

I had a more intimate acquaintance with him since 1938 and appreciated his excellent qualities of loyalty, co-operation and zeal. He had suffered considerably for the past few years, yet never grumbled, and when I bade him good-bye early this year he had great hopes, and so had all his friends, that his contemplated operation would restore him to normal health.

He was most popular with the farming community and his day seldom ended with the usual office hours, for he addressed meetings at least twice a month.

I had lots of evidence of his devotion to his wife and family, hence his great loss to the latter and the community generally.

J. F.

GENERAL OBITUARY

Dr. George Shearer

We record with deep regret the death, which occurred at Aberdeen on November 11th, of George Dower Shearer, B.Sc., Ph.D. (Cantab.), whose career as a biochemist brought him into contact with many members of the veterinary profession, who held him in high esteem and much affection. Graduating B.Sc. from Aberdeen University in 1926, he worked in the Biochemical Department there until March, 1928, when he secured an appointment in the Department of Animal Pathology of the University of Cambridge, where, for 20 years, he worked chiefly on research into swayback in lambs. He gained his Ph.D. from King's College, Cambridge, in June, 1937.

A Tribute

Where or how it began we do not know, but somehow 25 years ago there arose among us a new growth, a new enthusiasm to solve the problems of animal disease, and a handful of young men embarked upon research work as a career. Among us in those spring-like days was George Shearer. He was to be with us for the whole journey, but he was overtaken by the grimmest disaster while the journey was hardly begun, and we, his colleagues, suffered the anguish of leaving him by the wayside. And now George has passed away.

As biochemist at the Institute of Animal Pathology at Cambridge in the 1930's he delighted his colleagues with his infectious laughter, his sincere enthusiasm for his researches and his prowess at cricket. He contributed to many of the research activities of the Institute; his greatest interest was in swayback, and his contributions to this subject were a major factor in the elucidation of the relation between the disease and pasture minerals. It is believed by many that the affliction which assailed him in the late 30's and afflicted him progressively to his death in Aberdeen on November 11th, may have been connected with his work on swayback.

We mourn a great friend and give thanks for his contribution to our common endeavours. His friends in the profession will feel the deepest sympathy with his parents and sister who have lost him after tending him through his long illness.

R. S. R.

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AREA ERADICATION PLAN FOR TUBERCULOSIS

Declaration of Eradication Areas

In a recent notice the Ministry of Agriculture and Fisheries announce the declaration by the Minister of three tuberculosis eradication areas—two in South Wales and one in Central Scotland.

Since October 1st, 1950, free tuberculin tests have been provided in three areas, namely: (*a*) that part of the county of Pembroke not included in the South-West Wales attested area; (*b*) that part of the county of Glamorgan west of the Swansea Valley, including the Gower peninsula, and the Bettws Mountain district of Carmarthen; and (*c*) the counties of Dunbarton, Lanark, Peebles and Stirling. With the help of the free tests most of the herds that were not then attested have since qualified for entry to the voluntary Tuberculosis (Attested Herds) Scheme and for bonus payments.

Under the Tuberculosis (Pembrokeshire Eradication Area) Order, 1953, the Tuberculosis (West Glamorgan Eradication Area) Order, 1953, and the Tuberculosis (Central Scotland Eradication Area) Order, 1953 (S.I. 1953 Nos. 1654, 1655 and 1653 respectively), which come into operation on January 1st, 1954, these three areas are declared Tuberculosis Eradication Areas. The three areas will then become subject to the provisions of the Tuberculosis (Area Eradication) Order, 1950. That Order provides that no cattle shall be moved into an eradication area or attested area except on certain transit journeys or under the authority of a licence issued by a Veterinary Inspector or other officer of the Ministry or of a permit issued under the Tuberculosis (Attested Herds) Scheme, 1950; that a notice may be served on the occupier of any premises in such an area prohibiting the movement of cattle on to or off the premises except under licence;

and contains other provisions designed to prevent the introduction or spreading of tuberculosis.

Copies of a memorandum explaining how the provisions of the 1950 Order relating to the movement of cattle into and within tuberculosis eradication areas and attested areas will be applied may be obtained on application to the Secretary, Ministry of Agriculture and Fisheries, Animal Health Division, Hook Rise, Tolworth, Surbiton, Surrey, or 15, Moray Place, Edinburgh, 3.

Farmers who have not cleared tuberculosis from their herds and qualified for entry to the Tuberculosis (Attested Herds) Scheme before January 1st, 1954, will have lost their chance of bonus payments. From that date all herds in the three areas will be tested and any reactors found will be slaughtered with payment of compensation on the basis of the market value of the animal as an untested animal. When disease has been eradicated the two Welsh areas will be added to the South-West Wales attested area and the Scottish area to the South-West Scotland attested area.

Copies of the three Orders may be purchased directly, price 2d. each, from H.M. Stationery Office at the following addresses: York House, Kingsway, London, W.C.2; 429, Oxford Street, London, W.1; 13a, Castle Street, Edinburgh, 2; 39, King Street, Manchester, 2; 2, Edmund Street, Birmingham, 3; 1, St. Andrew's Crescent, Cardiff, and Tower Lane, Bristol, 1; or by post (3½d.) from P.O. Box No. 569, London, S.E.1.

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FAO AND FOOT-AND-MOUTH DISEASE

Addressing the seventh conference of the organisation on losses due to animal diseases held recently in Rome, Sir Herbert Broadley, Deputy Director-General of the Food and Agriculture Organisation, announced that foot-and-mouth disease is to be tackled in 10 countries.

The FAO, he said, proposed to provide the secretariat for the projected European foot-and-mouth disease commission, and was already at work on regional schemes designed to control the disease. Co-operation was proceeding with the Organisation of American States, a foot-and-mouth disease centre in Brazil for training purposes, while Governments were being assisted in developing the latest techniques in the production of veterinary biologics and in providing stock cultures. Advisory assistance was also being rendered in the control of various types of parasites.

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CLEANER FOOD

In its issue of November 24th *The Manchester Guardian* published, under the above heading, the following letter from Mr. John King Shaw, M.R.C.V.S., Veterinary Officer to the Burnley Public Health Department:—

Sir,—In your leading article on November 12th, on the necessity for additional legislation to achieve more hygienic preparation and handling of food, you rightly said that it would be ineffective if not properly enforced, and expressed the need for an independent food inspectorate under direct Government control, such as operates effectively in other countries.

The officers of the Enforcement Division of the Ministry of Food who functioned from the end of the war were far more effective in dealing with black-market activities than were the officers appointed by the individual food control committees in the earlier years of the war.

Over 1,530 local authorities in England and Wales are responsible for the inspection of food and food-preparing premises in their respective areas. It is not surprising, therefore, that standards vary considerably. For example, when local authorities were responsible under the Milk (Special Designations) Orders for the licensing of dairy farms for the production of tuberculin-tested milk, a farm in the area of one local authority would be refused a licence, while another farm with identical conditions in an adjoining authority's area would be granted one without question. Since the granting of such licences became the responsibility of the Ministry of Agriculture in 1949, these farm premises are judged on a national standard.

About 12 months ago I had occasion to obtain a magistrate's order for the condemnation of several thousand tins of unsound food in the possession of a market trader. Subsequent enquiries showed that these tins had already been the subject of apparently satisfactory inspection by the staff of at least two other local authorities in whose areas they had been exposed for sale on open markets, yet some of the tins consisted of tinned meat soups, obviously unsound when opened, which soup had been canned over 10 years previously by a firm who had in the meantime gone out of existence. The enquiries also revealed that such tins had some months previously been disposed of as "dead" stock by a wholesale firm in the Midlands at the price of 5s. per gross (less than the original cost of the container) and had subsequently been supplied by a London firm direct to the market trader in Lancashire.

Local authorities are responsible for the licensing of slaughter-houses, knacker's yards and slaughtermen. The Northumberland Committee's report has shown that in respect to the slaughter of horses alone conditions are often far from satisfactory. Yet local authorities have power under Section 57 of the Food and Drugs Act to refuse or cancel licences where premises are unsatisfactory.

Many years ago some local authorities established public abattoirs, some of which have now become outdated and unsatisfactory, so that the local authorities owning them are in fact perpetuating the very conditions which they originally aimed at stamping out.

As an officer with over a quarter of a century's experience of food inspection I can confirm that this is highly specialised work, which must be carried out at all times when food is being prepared and sold, including, of course, Saturday afternoons and Sundays. The duties of sanitary inspectors are multifarious; few of them have the opportunity to obtain by practical experience specialised knowledge of and skill in the inspection of meat and other foods. As a general medical practitioner has available and does not hesitate to call to his aid a consultant physician, so should the sanitary inspector welcome the opportunity of having the assistance when necessary of a specialist officer approved by the appropriate Government department.

In a paper which I read at a sessional meeting of the Royal Sanitary Institute in 1950 I suggested the formation of a specialist Food Inspectorate to operate on a regional basis. It is gratifying to find that recommendations on these lines have since been made by both the Departmental Committee on Meat Inspection and the more recent Departmental Committee on the Slaughter of Horses.—Yours, etc., John King Shaw, Haworth Fold, Burnley, Lancs. *Nov. 20th.*

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax:

Ches.—Sworton Heath Farm, Swineyard Lane, High Legh, Knutsford (Nov. 24).

Westmorland.—Dawson Fold Farm, Lyth, Kendal (Nov. 24).

Wilts.—Pickwick Lodge Farm, Corsham (Nov. 25).

Fowl Pest:

Essex.—Berechurch Poultry Farm, Kingsford, Colchester (Nov. 25).

Isle of Ely.—36, Bridge Street, Chatteris (Nov. 25).

Lancs.—Owlet Nest Farm and Hullet Hall Farm, Foubridge, Colne (Nov. 26).

Lincs.—Wrights Yard, Grantham Street, Lincoln (Nov. 25).

Suffolk.—Barnaby Farm, Rishangles, Eye; Chapel Farm, Ringshall, Stowmarket (Nov. 26).

Sussex.—Stoney Meadow Farm, Mundham, Chichester (Nov. 25).

SWINE FEVER:

Beds.—Souldrop Wold Farm, Colworth; Sharnbrook, Bedford (Nov. 28).

Cambs.—Home Orchard, Bassingbourne, Royston, Herts (Nov. 27).

Ches.—1 and 2, Smallholdings, Highfield Estate, Levenshulme, Manchester (Nov. 26).

Essex.—Purleigh Hall, Purleigh, Chelmsford (Nov. 27).

Lancs.—Kitchen Ground Dairy, Ellel, Galgate, Lancaster (Nov. 26); Eaves Brow Farm, Croft, Warrington (Nov. 27).

Lincs.—Hundle House Farm, New York, Lincoln (Nov. 25).

Norfolk.—Hill Farm, Stratton Strawless, Norwich (Nov. 27).

Suffolk.—Wyoming Tea Gardens, Beccles (Nov. 25); Baloon Barn Farm, Culford, Bury St. Edmunds (Nov. 26); Symonds Farm, Great Saxham, Bury St. Edmunds (Nov. 27).

Sussex.—The Sloop Inn Smallholding, Scaynes Hill, Haywards Heath (Nov. 25).

Worcs.—36, The Row, Severn Stoke, Worcester (Nov. 28).

Yorks (W.R.).—Church Hill Farm, Crofton, Wakefield (Nov. 28).

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MARKETING OF AGRICULTURAL PRODUCE, INCLUDING FAT STOCK

The Bury St. Edmunds Corn Exchange was filled on November 27th when Mr. G. R. H. Nugent, M.P., Joint Parliamentary Secretary to the Ministry of Agriculture and Fisheries, addressed a meeting arranged by the West Suffolk A.E.C. Mr. Nugent was deputising for the Minister, Sir Thomas Dugdale, who was indisposed.

Mr. Nugent reviewed the various marketing schemes outlined in the recent White Paper on the Marketing of Agricultural Produce. He said that these schemes fully implemented the pledges contained in the 1947 Agricultural Act. The system of guaranteed prices would continue and, as in the past, these would be announced after the February Price Reviews. The difference would be that instead of the Ministry of Food paying fixed prices, as at present, the guaranteed prices would be maintained by arrangements such as deficiency payments, support prices, or the provision of marketing boards, the method employed varying from one commodity to another. The explanatory memorandum of the 1947 Act had anticipated that various methods of this kind might be used to implement the policy of a guaranteed price.

On the subject of the marketing of fat stock, Mr. Nugent said that the Government's aim had been to devise an effective scheme which could be brought into use next year and which, instead of the present system of allocation, would give full opportunity of choice to the consumer. He acknowledged the potential value of the method of marketing meat on a dead weight basis "off the hook," but said that the cold stores, refrigerator plants and physical facilities required for such a method did not exist in sufficient quantity, and could only be built up over a period of years. On the other hand, the method of the twofold price guarantee and the restoration of fat stock auction sales proposed in the White Paper would use existing facilities and could be brought into operation next year. The White Paper gave the N.F.U. the opportunity to set up a marketing board which, working on a voluntary basis, would provide an alternative to the auction-sale system, and Mr. Nugent was glad to see that the N.F.U. had accepted this challenge.

The meeting, which was a lively one, made full use of question time. Most of the questions concerned the marketing of cereals, but in reply to one on the possible restoration of the Pig Marketing Board, Mr. Nugent again emphasised that an "off the hook" scheme for the sale of pork could not be adopted by the Government because of the lack of facilities.

E. A. G.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

CANINE DISTEMPER PROPHYLAXIS

Sir,—I am indeed interested in Dr. Schnelle's letter (*Vet. Rec.* **65.** 855) in which he asked if there has been any published evidence as to the therapeutic properties of egg-adapted distemper virus in the treatment of distemper and hard pad disease.

To the best of my knowledge, no extensive evidence on this point has been published in British literature, but my colleague, Mr. A. B. MacIntyre, is preparing a short article which he hopes to offer for publication in *The Veterinary Record* in the near future.

Our interest in the use of distemper virus as a therapeutic agent stems from the successful treatment of huskies affected with hard pad disease as suggested by us to Mr. Woodrow and reported by him (*Vet. Rec.* **61.** 821). From that time we encouraged a number of veterinary surgeons in practice to co-operate in assessing the value of this line of treatment in distemper and in hard pad disease. On the results of a long series of observations reported to us it was very evident that a virulent strain of canine distemper virus was a therapeutic agent of value. Many of these observations were made with virus quite specially prepared from the tissues of affected dogs. In view of the obvious risk associated with the use of living virulent virus, the later observations were on the therapeutic value of an egg-adapted strain. On the collected field evidence we had no hesitation in recommending this strain for therapeutic purposes and our only regret is that Dr. Schnelle must wait a little longer before a summary of that evidence is offered for publication.—Yours faithfully, R. F. MONTGOMERIE, The Wellcome Research Laboratories, Langley Court, Beckenham, Kent. *November 21st*, 1953.

Sir,—Dr. G. B. Schnelle's letter in *The Veterinary Record* dated November 21st concerning the use of the egg-adapted distemper vaccine raises a most important issue. There has been insufficient time to assess its value as a prophylactic against canine distemper and "hard pad" in this country under field conditions. In my hands to date, in a limited number of cases, it has had no appreciable value in the treatment of the latter condition once it is established. In two cases, both of which subsequently died, the dogs had previously been vaccinated elsewhere against canine distemper by the vaccine-virus or virus-serum method.

To me it is significant that at least three other cases have been encountered in which an illness, subsequently proving to be "hard pad," has developed in dogs two to three weeks after egg-adapted virus had been injected prophylactically. The incubation period of the disease we know may be prolonged. Assuming that the animals were infected one to two weeks before inoculation, then it is evident that in these cases it had no power to curtail the infection, and did not, in fact, prove of value as a therapeutic agent even when injected long before symptoms became apparent. I have used a large number of doses prophylactically and time will tell whether the animals so injected will stand up to the test of the heavy "hard pad" infection which is evident in this area at the moment.

There may, of course, be technical difficulties associated with its production, but one wonders why, since "hard pad" seems to be the predominant infection, it is not possible to produce an egg-adapted "hard pad" vaccine.—Yours faithfully, H. A. CRAWSHAW, 37, St. John's Road, Newbury. *November 21st*, 1953.

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THE VETERINARY ASSISTANT PROBLEM

Sir,—In support of Mr. A. V. B. Foster's views I would like to state that I believe this is one of the most important and most urgent problems of to-day and is by no means restricted to members of our own profession. One feels that two years' National Service is more than this country can afford. It is certainly more than a recent professional graduate can afford. I believe that a new graduate into any of the professions should be prepared to work hard and continuously at his job if he is to make a success of it. If a graduate is immediately taken up for National Service it is unlikely that in the Armed Forces he will

find scope for the proper exercise of his professional training. It is even more unlikely that after two years in the Armed Forces he will retain the same keenness for his professional work that he had on graduating. Finally, if his profession is a modern scientific one, then two years' absence from it will find him completely out of touch on his return to civilian life, so rapidly does science advance in this present day.

One hears of so many instances of prolonged periods of slackness and boredom suffered by our young conscripts that one wonders if it would not be more rational and better for everyone if the period of National Service were reduced to six months of really intensive whole-time training.

There is no lack of informed opinion that this country's greatest need is for highly trained and skilled technicians, yet having gone to immense expense and trouble to produce them we subscribe to this idiotic system of destroying what we have created.—Yours faithfully, J. P. Pickering, Orchard House, Priestpopple, Hexham, Northumberland. *November 21st*, 1953.

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Sir,—Mr. Foster's letter of November 9th provokes me to counter with an assistant's point of view.

He raises two points. That concerning the National Service commitments of graduates I am ignoring, for I wish to deal with the assistant problem, a bogy that may have been aggravated, but was certainly never precipitated, by the recent change in the call-up regulations.

In a seller's market such as persists at present the "quite unemployable persons" are unfortunately able to exist, but let us not lose our sense of proportion and brand assistant as synonymous with waster.

My contention is that there are numerous worthy assistants to be had, and I suggest that some of the 35 to 40 regular advertisers could never keep a good man if they had one. Hence one reason for an inflated Situations Vacant column.

I am unable to believe that principals who repeatedly advertise are the constant unfortunate victims of a bunch of ne'er-do-wells. No, there are some principals who would do well to reform their terms of employment. May I suggest a few pertinent points, therefore, for their consideration:—

1. *Wives.* Does the wife interfere unnecessarily with matters related entirely to the practice?

2. *Promises.* Are promises glibly given and equally so forgotten once the new employee has gone to considerable expense to move his furniture a couple of hundred miles?

3. *Conditions.* Is the time off reasonable? Remember that all work and no play makes Jack a dull boy and hardens him on this point at a subsequent interview.

4. *Housing.* If married accommodation is offered, could a professional man reasonably be expected to inhabit it?

5. *Incentive.* Could not an incentive be offered in an effort to maintain and expand the clientèle and to reduce waste on car and drug expenses?

Finally, when advertising, I suggest we have less secrecy and more courtesy, by using fewer box numbers, answering all replies (particularly those for which a stamped envelope is provided) and cancelling the order for repeated insertions once the post has been filled.

I do not write this as the result of a hard personal experience, for I am employed in a practice where an assistant is actively encouraged to stay, but I feel that the general heading of all letters on this topic could well be changed to The Princip(le)al Problem: besides I prefer the alliteration.—Yours faithfully, Sherwin A. Hall, Heathside, Butts Ash Lane, Dibden Purlieu, Hythe, Hants. *November 23rd*, 1953.

. . . . . .

Sir,—In my opinion the only way to get an assistant is either to take students who wish to see practice or to contact teachers in the final year.

Those who are classified as extra-mural teachers should fulfil their duties, and give the students a fair deal, by allowing them to become fully acquainted with, and able to do, those tasks which they will have to do after graduation.

I feel that the ban on experienced final year students acting as locums is unjustified and should be removed.

My experiences in advertising are identical with those of Mr. Foster and I fully endorse every word of his letter. It seems quite impossible to secure as an assistant one who can be early appointed as an L.V.I., and doubtless there are many more like myself who have to devote far too much time to it whilst leaving private work to a recent graduate, which is neither fair to him nor to the client. The Army call-up is an utter farce, and is only one more sign of the fading political interest in our basic industry.—Yours faithfully, J. F. D. Tutt, "Rothiemurchus," St. Cross, Winchester. *November 28th*, 1953.

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V.V.B.F. CHRISTMAS APPEAL

Sir,—It is usual at this time of the year to remind readers, through your journal, of the Christmas Fund Account. We therefore earnestly appeal to members to please send us a donation, however small, in order that our recipients, including widows of veterinary surgeons left unprovided for, several old and infirm members who can no longer practise, and a number of families with young children, may be given a gift to enable them to obtain those little extra comforts which will mean so much to them at Christmas.

Please send your donation to the Secretary, V.V.B. Fund, 10, Red Lion Square, London, W.C.1, who will gratefully acknowledge receipt.—Yours faithfully, J. Basil Buxton, *President*; H. W. Dawes, *Hon. Treasurer*; J. J. Dunlop, *Hon. Secretary*, 10, Red Lion Square, London, W.C.1. *November 23rd*, 1953.

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SMITH'S "VETERINARY PHYSIOLOGY"

Sir,—We are badly in need of a copy of Smith's *Veterinary Physiology*, 1921 edition, and we are wondering whether there is any member of the British Veterinary Association who has a copy in their library and would be willing to dispose of it to us. If so, we should be most grateful if they would write to us and perhaps you would be kind enough to publish this letter in an early issue of your journal.—Yours faithfully, R. F. West, *Director*, Baillière, Tindall & Cox, Ltd., 7 and 8, Henrietta Street, Covent Garden, London, W.C.2. *November 25th*, 1953.

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THE TOXIC TOAD

Sir,—The two recent writers (Smythe, 1953; Shaw, 1953) on this subject and other clinicians may be interested to learn that, in the *Veterinary Journal* of 1925, Mayall (1925) gives an excellent account of two cases of acute distress following contact with a toad. This article, which I happened on by chance, describes the effects on a Welsh terrier and a cat, the latter even being afflicted with a temporary blindness. The writer states, "It (the toad) does not spit venom, but becomes covered with milky-white and very strong poison when in acute agony, for instance when trodden upon or bitten, and unless the big skin glands be forcibly squeezed there will be no squirting. On the skin there are abundance of follicular glands having a special secretion always more or less acrid and irritating."—Yours faithfully, R. N. Smith, Bristol. *November 30th*, 1953.

Mayall, G. (1925). *Vet. J.* **81.** 232.
Shaw, G. K. (1953). *Vet. Rec.* **65.** 600.
Smythe, R. H. (1953). *Ibid.* **65.** 468.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th November, 1953 ...	17	5	35	—	73
Corresponding period in—1952	119	1	7	—	21
1951	15	5	62	1	74
1950	9	—	4	—	35
1st January to 15th November, 1953	545	34	825	—	2,509
Corresponding period in—1952	961	495	206	1	764
1951	354	33	715	6	1,196
1950	306	20	111	23	277